

What is claimed is:

1. A data communication apparatus comprising:

means for obtaining an index representative of a state of a network;

and

means for controlling a bit rate according to a proportional process

5 and an integral process on the difference between a target value for said index
and an observed value of said index.

2. A data communication apparatus according to claim 1, wherein

said index comprises an amount of data buffered in said network.

3. A data communication apparatus according to claim 2, further

comprising:

means for calculating a round-trip time over said network; and

means for calculating said amount of data using said round-trip

5 time.

4. A data communication apparatus according to claim 1, further

comprising:

means for transmitting transmission data with serial numbers assigned thereto in a sequence of the transmitted data;

5 means for returning a reception report to which the serial numbers
assigned to received data are assigned; and

means for receiving said reception report and using information about data transmitted after said transmission data is transmitted until said reception report is received, as said observed value of said amount of data.

10

5. A data communication apparatus according to claim 2, further comprising:

means for transmitting transmission data with serial numbers assigned thereto in a sequence of the transmitted data;

5 means for returning a reception report to which the serial numbers assigned to received data are assigned; and

means for receiving said reception report and using information about data transmitted after said transmission data is transmitted until said reception report is received, as said observed value of said amount of data.

10

6. A data communication apparatus according to claim 4, wherein said information about the transmitted data comprises an amount of the transmitted data.

7. A data communication apparatus according to claim 5, wherein said information about the transmitted data comprises an amount of the transmitted data.

8. A data communication apparatus according to claim 1, for transmitting data of audio and video signals encoded in real-time at a bit rate which is controlled based on the state of the network.

9. A data communication apparatus according to claim 2, for transmitting data of audio and video signals encoded in real-time at a bit rate which is controlled based on the state of the network.

10. A data communication apparatus according to claim 3, for transmitting data of audio and video signals encoded in real-time at a bit rate which is controlled based on the state of the network.

11. A data communication apparatus according to claim 4, for transmitting data of audio and video signals encoded in real-time at a bit rate which is controlled based on the state of the network.

12. A data communication apparatus according to claim 1, for preparing a plurality of data of audio and video signals encoded at different bit rates and transmitting said data at a bit rate determined based on the result of a bit rate control process.

5

13. A data communication apparatus according to claim 2, for preparing a plurality of data of audio and video signals encoded at different bit rates and transmitting said data at a bit rate determined based on the result of a bit rate control process.

5

14. A data communication apparatus according to claim 3, for preparing a plurality of data of audio and video signals encoded at different bit rates and transmitting said data at a bit rate determined based on the result of a bit rate control process.

5

15. A data communication apparatus according to claim 4, for preparing a plurality of data of audio and video signals encoded at different bit rates and transmitting said data at a bit rate determined based on the result of a bit rate control process.

5

16. A data communication apparatus according to claim 1, wherein said means for controlling the bit rate comprises means for using, as said bit rate, the sum of a value proportional to the difference between the target value for said index and the observed value of said index, and a value produced by multiplying an integral of said difference by a constant.

5

17. A data communication apparatus according to claim 2, wherein said means for controlling the bit rate comprises means for using, as said bit rate, the sum of a value proportional to the difference between the target value for said index and the observed value of said index, and a value produced by multiplying an integral of said difference by a constant.

5

18. A data communication apparatus according to claim 3, wherein said means for controlling the bit rate comprises means for using, as said bit rate, the sum of a value proportional to the difference between the target value for said index and the observed value of said index, and a value produced by multiplying an integral of said difference by a constant.

5

19. A data communication apparatus according to claim 4, wherein said means for controlling the bit rate comprises means for using, as said bit rate,

the sum of a value proportional to the difference between the target value for said index and the observed value of said index, and a value produced by multiplying
5 an integral of said difference by a constant.